England, leaving it to be implied that the local time thus shown is that actually employed, and Kelly's famous directories are disfigured with similar tables.

It is much to be regretted that the system of numbering the hours of the day from 0 to 24 has failed to hold the popular fancy. Despite the big clock-face on Greenwich Observatory, people still know their hours by the old ambiguous titles. Usually there is no room for misunderstanding, but mistakes are sometimes possible. A foreign potentate visiting this country recently was much *fêted* during his short stay, breakfasts, luncheons, and dinners being given in his honour, when a certain judge issued a card of invitation to a "Reception at 10 o'clock," which some of the guests interpreted as a.m., and others as p.m. Missing a foreign Prince through such ambiguity is a trifle compared with missing a train or miscalculating the length of a journey, and yet we know of no English time-table (we have heard of American) in which the simple plan of naming the afternoon hours from 12 to 23 is adopted. The method is occasionally used in the record of scientific observations, and always with advantage.

The present time-standards on the railways of Europe may be summarized as follows:—

(1) *Time of the initial meridian* (Western Europe) 0° (12.0):—Great Britain, Belgium, the Netherlands.

(2) *Time of the first hour interval* (Central Europe), 15° E. (13.0): Sweden, Luxemburg, Germany (Prussia excepted temporarily), Austria-Hungary, Servia, Bulgaria, Western Turkey.

(3) *Time of the second hour interval* (Eastern Europe), 30° E. (14.0): Eastern Turkey, Russia (practically).

Countries conforming to national standards or to no system, with the hour adopted in their capitals at Greenwich noon: Ireland (11.35), France (12.9), Spain (11.46), Portugal (11.23), Switzerland (12.30), Italy (12.50), Rumania (13.44), Greece (13.35).

HUGH ROBERT MILL.

NOTES.

MR. H. T. STAINTON, F.R.S., the well-known entomologist, has been appointed one of the Curators of the Hope Professorship at Oxford, to fill the vacancy caused by the death of Prof. Moseley.

SIGNOR GIUSEPPE FIORELLI is retiring from the general direction of the antiquities of Italy, and his friends and admirers have resolved to mark the occasion by giving expression to their high appreciation of his work as an archæologist. A committee has been appointed by the Accademia dei Lincei to make the necessary preparations. It is proposed that a medal shall be struck in his honour, and that any sum which may remain after this has been done shall be set apart for the encouragement of archæological studies in accordance with Signor Fiorelli's suggestions.

THE second International Congress of Physiology is to be held at Liége on August 28 to 31.

ON Tuesday a conference was held at Lord Brassey's house for the consideration of the best means of establishing a laboratory of marine biology in Jamaica in commemoration of the fourth centenary of the discovery of America. Lord Rosse moved the first resolution, "That an observatory of marine biology in tropical seas is necessary for the development of science." Prof. Ray Lankester seconded the resolution, and in doing so said that nothing could do more to advance our knowledge of biology at the present moment than the work of such a laboratory as that which it was proposed to establish. They wanted a place where the naturalist could work, and above all they wanted an organization, with a permanent official in charge who would gradually accumulate knowledge of the animals and plants which were to be found in the surrounding waters. They wanted in such a laboratory the means of dredging. He hoped they would have a steam vessel, and that the vessel would be large, and the actual building of the laboratory small. He trusted that there would be an adequate private subscription to enable them to build the laboratory, but the carrying on of the work would require an annual income, which he hoped the home Government and the island Government would be prepared to find. The resolution was carried unanimously. Mr. Villiers-Stuart moved, and Mr. Wellesley Bourke (M.L.C., Jamaica) seconded, "That no tropical sea promises so rich a harvest of biological specimens as the great gulf of the West Indies; that Jamaica is the most central and most suitable station for such an observatory, and that its establishment would be a suitable memorial of the fourth centenary of the discovery of the Western Hemisphere." This also was unanimously agreed to.

THE Crystal Palace on Saturday last was specially visited by Lord Kelvin to view the National Electrical Exhibition at present being held in its buildings. This Exhibition, as everyone who has seen it must be aware, is a thoroughly representative one, and besides illustrating the present condition of the application of electricity for practical purposes, carries one back especially in the Post Office exhibit, to the time of its infancy: the historical collection is of considerable importance, and has been well selected. Instruments are there shown, which have five needles on their dials, the presence of which was once necessary to carry on a conversation, the number of words spoken per minute amounting only to single figures. Very interesting old specimens of cables are also shown, together with the part of a telegraph post connected with the pathetic case of a poor woodpecker which, in the endeavour to find the insect that was producing (so he thought) the humming noise in the post, had pecked a large hole in it. In the demonstration room of Messrs. Siemens Brothers, some truly wonderful sights were displayed. The flame produced by exciting an induction-coil by means of an alternating current was produced on a very large scale, and as it issued from the secondary poles, was made to pass through pieces of wood, lumps of salt and slate, the most striking case being its passage through a large piece of plate glass, for which a very strong current was required. Among the many other exhibits, we may mention the demonstrations in cooking by electricity. The bottom of the kettle or saucepan is coated with a specially prepared enamel, into which a fine wire resistance is embedded; by this means, as the wire becomes heated, the temperature of the kettle, and therefore of the water in it, is raised. We may note that the Exhibition closes on Saturday, July 2, so that those who have not already visited it should do so without delay.

A REUTER'S telegram from Vizagapatam, Madras, announces the death of Mr. Narasinga Row, the well-known native astronomer. He died on Saturday last.

THE death of Hermann Burmeister, the well-known German zoologist, at Buenos Aires, is announced. He died on May 1 in his eighty-sixth year. In his early days he was a Professor of Zoology at Halle. During the revolutionary period of 1848 and the following years he associated himself prominently with the Liberals, the result being that in 1850 he had to quit Germany. He travelled for some time in Brazil, and then returned to his native country. He went back to South America in 1856, and not only visited most parts of the Argentine Republic, but crossed the Andes by a way which had never before been taken by a European. After another brief visit to Germany, he finally settled in Buenos Aires in 1861, where he formed the well-known National Museum of Natural Science. Only an accident made it necessary for him to resign his position as Director, and the community, by which his services were highly appreciated, took care that he was properly pensioned. He was buried at the cost of the State, and the President was present at the funeral.

During the latter part of last week an area of high pressure lay over the Bay of Biscay and the west of France, and an area of low pressure over Scandinavia and the North Sea, causing moderate north-westerly and westerly winds over these islands. The temperature had continued low, the maxima only exceeding 60° at a few places, chiefly in the southern parts of the kingdom, while the nights were very cold for the time of the year, with ground frosts over the inland parts of England. Thunderstorms occurred in many parts, with heavy showers of rain, and hail in the south-east of England. At the beginning of the present week the low barometer extended gradually over the kingdom, and shallow depressions were travelling from west to east. With this distribution of barometric pressure, the winds were from north and east over Scotland, and chiefly from between north-west and south-west over England and the Channel; subsequently the barometer readings became more uniform, and the winds light and variable. The weather continued very unsettled, although there was some increase of temperature. The report issued by the Meteorological Council for the week ended the 18th instant shows that the mean temperature was below the average for the week in all districts, the deficit ranging from 3° in the Channel Islands to 8° in the Midland and Eastern Counties of England. Rainfall was only slightly above the mean in the east of Scotland.

The Washington Weather Bureau has just distributed two important meteorological papers prepared by General A. W. Greely, Chief Signal Officer. (1) A series of thirty-seven charts showing the absolute maximum and minimum temperatures in the United States for decades, and for all years combined, compiled from observations taken from 1872 to June 1891. The values, together with the date of occurrence, are printed over the names of the stations on ordinary maps, and show very clearly for each locality the limits within which the temperature may be expected to range. (2) Diurnal fluctuations of atmospheric pressure at twenty-nine selected stations in the United States. The tables give the corrections necessary to reduce the mean pressure at any hour of the day to the true daily mean. The values have been obtained by freehand curves from all the available observations from January 1877 to June 1888. It is found that the fluctuations of the secondary maxima and minima diminish from south to north, especially during the summer months. The daily variation in pressure decreases with increasing latitude, especially in the winter months; in summer the same conditions exist, except that the daily range increases inland from the coast. The principal maximum occurs over the whole of the United States in January, about 9h. 45m. a.m. (local time), except along the New England coast, where it is earlier; as the year advances the hour gradually shifts towards the earlier morning until June, after which a reversal gradually occurs. The delay in the hour of the principal minimum is more marked: it gradually becomes later with increasing longitude; the most decided lagging in the summer minimum is in the neighbourhood of the Great Lakes.

Prof. R. Kobert gives, in the *Chemiker Zeitung* (1892; 16, No. 39), an account of Williams's frog heart apparatus. The apparatus, as modified by Maki, Perles, and Kobert, consists of an arrangement of glass vessels and india-rubber tubes, whereby a heart taken from a newly-killed frog can be made to maintain an artificial circulation of blood, fresh or injected with any poison the effect of which it is sought to determine. The tubes and vessels are mounted on a stand about 1 foot high. The heart is suspended by a cannula leading into a three-way tube communicating with two vertical glass cylinders fitted with glass valves. Through one of these the heart is supplied with blood, either fresh from a rabbit, calf, or dog, and diluted with 0·75 per cent. salt solution, or poisoned. The other vertical cylinder leads back from the heart to the vessel from which the fresh blood is supplied. To start the action, fresh blood is allowed to enter the heart, which is thereby excited to a contraction, and pumps it back into the reservoir. The height through which it is raised, and the quantity that is raised in a given time, gives the work done, and the number of pulsations, and the volume raised in a given time determines the pulse-volume. The force exerted is measured by a small mercurial manometer, which may be rendered self-registering. To study the action of poisons on the power and vitality of the heart it is only necessary to admit the poisoned blood from the second reservoir. When the pulsation has ceased or diminished, fresh blood may be readmitted, which in many cases restores the pulsation. We have received a letter on this subject from Count F. Berg, of Livonia, who says Prof. Kobert is of opinion that the apparatus, if it were more generally known, would be of great service for the advancement of science, and would render unnecessary many an otherwise indispensable experiment in vivisection.

We have received a new planisphere, which is being sold by the *Register* Publishing Company, Ann Arbor, Mich. The rotary disk, on which the constellations are clearly marked, is made of good stiff cardboard, and the days of the year round the edge are neatly printed in white figures on a blue background. The planisphere is arranged for latitudes 38° to 48°, and shows on its disk all the principal stars in each constellation, with their lettering, and in some cases their names; thus, α Boötis = Arcturus, α Lyræ = Vega, &c. By simply turning the disk round until the day of the month comes opposite the time of day, the stars above the horizon at that time can at once be seen. On the back is a table for finding the times of visibility and positions of the planets, while there is also a key to enable one to determine the name of a planet which cannot be recognized. When once used, the handiness of such a planisphere as this will soon make itself apparent; and not only will it be adopted by possessors of telescopes, but it should be in the hands of all those who wish to be able to find and correctly name the various constellations.

Inquiries have recently been made by the British Consuls in Japan as to the various native industries that have sprung up for the production of articles which have hitherto been imported into that country from abroad. A summary of the information thus obtained has been prepared by Mr. Gubbins, Secretary of Legation at Tokio, and has been printed in the Foreign Office Miscellaneous Series. Mr. Gubbins says that in the case of some of the industries introduced into Japan, the country is now self-supporting, foreign competition being no longer possible; in others so much has been accomplished as to render it certain that the time is not far off when importation will altogether cease. The future of other industries again—such as that of cotton-spinning—though not so assured, is still hopeful; while even in those branches in which the least results have been obtained she possesses a constant advantage in the great cheapness of labour. Mr. Gubbins thinks that this progress has not been made at the sacrifice of any of the various artistic industries which are more peculiarly her own. While admitting that there is truth in the criticism that would disparage her progress for the reason that it is imitative and not constructive, he holds that the fact that Japan, an Oriental country, has been able to dissociate herself from her sister countries of the East and to profit by Western inventions to the extent that is in evidence augurs well for the years to come.

In the new number of the *Records of the Australian Museum* (vol. ii., No. 1), Prof. Alfred Newton, F.R.S., has a note which may be of interest to ornithologists in Australia. Having lately occasion to investigate the range of the sanderling (*Calidris arenaria*), he came across a memorandum made in the year

1860 of his having then seen, in the Derby Museum at Liverpool, two specimens of the larger race of this species, one in winter dress and the other in incipient spring plumage, both being marked as females, and as having been obtained at Sandy Cove in New South Wales, April 20, 1844, by the late John Macgillivray. This wandering species does not seem to have been hitherto recorded from Australia. Prof. Newton finds little verification of Temminck's assertion in 1840 ("Man. d'Ornithologie," iv. p. 349), often repeated in one form or another, that the sanderling occurs in the Sunda Islands and New Guinea; or even of a statement made by a recent writer in general terms, that it is a winter visitor to the islands of the Malay Archipelago ("Geographical Distribution of the Charadriidæ, &c.," p. 432). Java seems to be the only one of these islands in which its presence has been determined, and though it was included with a mark of doubt in the lists of the birds of Borneo by Prof. W. Blasius (1882) and Dr. Vorderman 1886) respectively, it has been omitted, and apparently with reason, from that of Mr. Everitt (1889). It is well known to pass along the whole of the west coast of America, and it has been obtained in the Galapagos and the Sandwich Islands, but Prof. Newton knows of no instance of its having been observed in any Polynesian group or within the tropics to the eastward of Java.

IN the same number of the *Records of the Australian Museum* is a valuable paper (with plate), by Mr. Charles Chilton, on a Tubicolous Amphipod from Port Jackson. Among some Australian Crustacea sent to Mr. Chilton as exchanges by the trustees of the Australian Museum was a tube-dwelling Amphipod collected in Port Jackson. There was a plentiful supply both of specimens and of the tubes formed by them, and after a full examination and comparison of them with Mr. Stebbing's description and figures, Mr. Chilton has no doubt that they belong to *Cerapus flindersi*, Stebbing, a species described from a single female specimen taken in Flinder's Passage during the voyage of the *Challenger*. Mr. Stebbing says nothing of the tube in his description, and Mr. Chilton presumes, therefore, that he has not seen it. Mr. Chilton is able to supplement Mr. Stebbing's description in this respect, and to describe the male of the species, and to give the points in which it differs from the female, and also some interesting facts on the changes in form that occur during the growth of the male.

SOME time ago the *Ceylon Observer* gave an account of the killing of a wild boar by a cheetah near Galle. In its issue of May 25 it prints a letter from Mr. Clive Meares, who says that the fortune of war has now gone the other way, a cheetah having been killed by a wild boar. The coolies of Ginniedominie estate, Udagama, on going to work on the morning of May 23, discovered in a tea-field near the jungle signs of a severe struggle having taken place between a cheetah and a wild boar —judging by the marks. On further search the dead body of a cheetah was discovered in the tea, death having evidently been caused by the severe handling it had received from the boar. The brain being very much congested with blood and several teeth marks deeply buried in the neck, there could be no doubt as to the cause of death. On the animal being skinned the wounds were found to be very deep. She weighed 42 pounds, and she was 71 inches long from nose to tip of tail, and 24 inches in height at the shoulders.

MR. A. REA, the Superintendent of the Archæological Survey, Madras, has reported an important discovery he has made of another casket, some relics, and inscriptions in the Buddhist stupa at Bhatuprolu in the Kistna District. In Sewell's *List of Antiquities*, vol. i. p. 7, mention is made of a casket found in the dome of the stupa some years ago. It struck Mr. Rea that as the chief deposit was usually placed near the centre of the foundations, it was probable that another casket might be found. Copies of his report, with inscriptions, have been ordered to be sent to Dr. Hultzsch, the Government Epigraphist; to archæological experts in India, and to various learned Societies.

MINING seems likely to be splendidly represented at the Chicago Exhibition. It is announced that "all of the precious minerals, all of the economic minerals, all of the precious stones, all of the coals, all of the building stones and marbles, all of the clays and sands, all of the salts and pigments, as well as the machinery, implements, and appliances employed in their conversion to the uses of man, will be fully represented." Especial attention will be devoted to the iron industry. The Exhibition will provide ample data as to the location and extent of the greater iron deposits, the analyses of the ores, with all the machinery and devices employed in mining, hoisting, conveying, storing, &c.

PROF. DANIEL G. BRINTON contributes to the new number of the Proceedings of the American Philosophical Society, vol. xxx., No. 137, valuable papers on the Chintantec language of Mexico, the Mazatec language of Mexico and its affinities, and South American native languages. Of the latter languages he says that they are the least known of any in the world.

A VOCABULARY of the Eskimo language has been compiled by M. Ryberg, a Danish official in Greenland. It represents work carried on during fifteen years.

THE publication of the quarterly journal for cryptogamic science, *Grevillea*, will still be continued under the proprietorship of Mr. E. A. L. Batters, and the editorship of Mr. George Massee.

MR. E. D. MARQUAND has published a list of the flowering plants and vascular cryptogams of Guernsey. It includes the remarkable number of 636 flowering plants, 18 ferns, and 9 fern allies. Of these about 130 are not recorded for Guernsey in Prof. Babington's "Primitiæ Floræ Sarniceæ."

THE latest researches of the Finnish expedition to the Kola Peninsula will modify the position of the line which now represents on our maps the northern limits of tree-vegetation in that part of Northern Europe. The northern limit of coniferous forests follows a sinuous line which crosses the peninsula from the north-west to the south-east. But it now appears that birch penetrates much farther north than the coniferous trees, and that birch forests or groves may be considered as constituting a separate outer zone which fringes the former. The northern limits of birch groves are represented by a very broken line, as they penetrate most of the valleys, almost down to the sea-shore; so that the tundras not only occupy but a narrow space along the sea-coast, but they are also broken by the extensions of birch forests down the valleys. As to the tundras which have been shown of late in the interior of the peninsula, and have been marked on Drude's map in Berghaus's atlas, the Finnish explorers remark that the treeless spaces on the Ponoi are not tundras but extensive marshes, the vegetation of which belongs to the forest region. The Arctic or tundra vegetation is thus limited to a narrow and irregular zone along the coast, and to a few elevated points in the interior of the peninsula, like the Khibin tundras, or the Luyavrurt (1120 metres high). The conifer forests, whose northern limit offers much fewer sinuosities than the northern limit of birch-growths, consist of fir and Scotch fir; sometimes the former and sometimes the latter extending up to the northern border of the coniferous zone.

THE British Consul in Hainan, in his last report, says that during the past year he has made two journeys in that island, one to certain prominent hills near Hoihow, known as the "Hummocks," which lie fifteen miles to the west, on the road to Ch'eng-mai, the other a gunboat cruise to Hansui Bay. The people at both these places, and presumably all along the north-west coast, though believing themselves Chinese, speak a language which is not only not Chinese, but has a large percentage of the words exactly similar to Siamese, Shan, Laos, or Muong. The type of the people, too, is decidedly Shan, without the typical Chinese almond eye. At one time (1000 years ago) the Ai-lau or Nan-chau Empire of the Thai race extended from Yun-nan to the sea, and the modern Muongs of Tonquin, like the Shans of the Kwangsi province, the ancestors of both of which tribes belonged to that empire, probably sent colonies over to Hainan; or the Chinese generals may have sent prisoners of war over. It is certain that some at least of the unlettered, but by no means uncivilized, tribes in the central parts of Hainan speak a type of language which is totally different from that spoken by the Shan-speaking tribes of the north-west coast. Yet the Chinese indiscriminately call all the non-Chinese Hainan dialects the Li language. The subject, Mr. Parker says, is one of great interest, well worth the attention of travellers. It was his intention to pursue the inquiry when making a commercial tour of inspection round the island, but his transfer to another post compels him to abandon his scheme.

THE additions to the Zoological Society's Gardens during the past week include a Brown Capuchin (*Cebus fatuellus*) from Guiana, presented by Mr. Edward Solomon; two Black Swans (*Cygnus atratus*) from Australia, presented by Lady William Osborne Elphinstone; a Greater Spotted Woodpecker (*Dendrocopus major*), two Common Cormorants (*Phalacrocorax carbo*), British, presented by Sir H. B. Lumsden, K.C.S.I.; a Greater Sulphur-crested Cockatoo (*Cacatua galerita*) from Australia, presented by Mr. F. R. Brown; two Common Rheas (*Rhea americana*) from the Argentine Republic, deposited; an Erxleben's Monkey (*Cercopithecus erxlebeni* ♂) from West Africa, a Victoria Crowned Pigeon (*Goura victoriæ* ♀) from the Island of Jobie, two Wonga-Wonga Pigeons (*Leucosarcia picata*) from New South Wales, a Rosy-billed Duck (*Metopiana peposaca* ♀) from South America, twenty Common Teal (*Querquedula crecca*), European, purchased; a Thar (*Capra jemlaica*), two Burrhel Wild Sheep (*Ovis burrhel* ♂ ♀), an Axis Deer (*Cervus axis* ♂), four Temminck's Tragopans (*Ceriornis temmincki*), a Himalayan Monaul (*Lophophorus impeyanus*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

COLOURS ON THE SURFACE OF MARS.—During the last opposition of Mars a series of observations was made by Prof. Pickering with the object of determining the general colour of this planet's disk, and that of the various markings distributed over its surface. In a preliminary account of this work which he has contributed to the June number of *Astronomy and Astro-Physics*, we are made acquainted with some of the observed facts, which will be read with keen interest, as we are nearing a time when like observations can be repeated. The instruments used were the 12-inch and 15-inch at Cambridge, and the 13-inch at Arequipa, Peru. With the two former sixty paintings were made, together with sixty-six uncoloured drawings, and with the latter some of the more recent observations were undertaken. The general light from the planet, although usually termed ruddy, was found to lie about midway between that of a candle and electric light of equal brilliancy, being somewhat bluer than the former and redder than the latter.

Great difficulty seems to have been found in matching Mars's colour in the day and night time, the presence or absence of the bluish white light reflected from the atmosphere bringing about a great difference in the colour of the pigments used. The colour finally settled upon may be represented by equal parts of dragon's blood and sienna. The ruddiness, as the limb was approached, gave way to a distinct yellow tint, due perhaps to atmospheric absorption, an effect, as Prof. Pickering remarks, which is quite at variance with the action of our own atmosphere. In addition to these colours grays and greens have been noticed, indeed at times the greens have been more intense than the red. The grey objects were found, when the seeing was very good, to have a slightly yellowish tinge about them, but when viewed by daylight a browner tint more accurately represented their colour.

Numerous observations were made also with the intention of determining the colour of those parts more darkly tinted, and the colour of the canals; but Prof. Pickering only mentions that there were indications of slight colour alterations, reserving his opinion on these points in order not to bias those of other observers, who will be able in the coming opposition to examine this planet's surface from this point of view.

During the months of July and August the planet, excepting for its low altitude, will be most favourably situated for observation, the opposition occurring on August 4, when its distance from the earth will be about 35,000,000 miles.

OBSERVATIONS OF THE MOON.—The *Monthly Notices* (vol. lii., No. 7) contains, besides the observations of the right ascensions and north polar distances of the moon made during the year 1891 at the Radcliffe Observatory, Oxford, a comparison of these results, with the tabular places taken from Hansen's lunar tables. The two suppositions on which these results are compared are, as Mr. Stone says: (1) that the mean times found in the usual way from the sidereal times at mean noon given in the *Nautical Almanac*, were not altered in scale, or affected with any different systematic errors of determination, by the adoption in 1864 of a different ratio of the Julian year of 365¼ "mean solar days" to the mean tropical year; (2) that the "mean times" which accurately correspond to a given "sidereal time of a meridian" were necessarily changed in 1864 by the use of a different ratio of the "Julian year," and therefore of the "mean solar day" to the mean tropical year, to fix the tabular right ascensions of the clock stars at the meridian transits. It is from these tabular right ascensions of the clock stars that the observed right ascensions are deduced by the aid of clocks; and the right ascensions thus found are finally rendered definite by the direct reference to the positions of the sun deduced from the north polar distances and obliquities of the ecliptic.

During the period included in the years 1847 to 1863 the mean annual error in longitude of Hansen's tables amounted to −1″·85, no regular law of increase being indicated. Taking the case of those observations made up to the end of last year, the mean annual error, as shown in the third table, has steadily increased from the year 1863 at an average rate of 0″·75 per annum, the error now amounting to as much as 19″·30. If the corrected argument be used for taking out the mean annual error of Hansen's tables during the same period, this value becomes −1″·49, which differs from −1″·85 (the value for the preceding period) by a quantity which in such a case is very small.

A PLANET BEYOND NEPTUNE?—For some time it has been thought that in all probability our sun is accompanied by one or two other planets which lie outside the orbit of Neptune. The idea gained a considerable footing in many minds after Prof. Forbes's paper, which he read in 1880 before the Royal Society of Edinburgh, his prediction being based on cometary aphelia positions. In order to investigate this question more fully, Mr. Isaac Roberts, having obtained the necessary approximate positions of these hypothetical bodies, undertook to make a search for them, employing the method of long exposure photography. The result of this search he communicates to the May number of the *Monthly Notices*.

The probable position indicated by Prof. Forbes lay between R.A.'s 11h. 24m. and 12h. 12m., with declinations 0° 0′ to 6° 0′ north; and over this region Mr. Roberts took two sets of eighteen plates, each plate covering more than four square degrees, the exposure being of 90 minutes' duration. A close examination of the plates showed that, in Mr. Roberts's words, "no planet of greater brightness than a star of the fifteenth magnitude exists on the sky area herein indicated."